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CANADIAN STROMATOPOROIDS.

By J. F. WHITEAVER.

Reprinted from the Canadian Record of Science, July, 1896.



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In Canada, as elsewhere, only the more obvious characters of the Stromatoporoidea were examined by the first students of this difficult group of fossils, and it is probable that some of the earlier species proposed will have to be abandoned, as inadequately defined.

Of late years, however, these organisms have been studied much more systematically, especially by Professor H. Alleyne Nicholson, of the University of Aberdeen, and the minute structure of the different species has been elucidated and their probable affinities ascertained by means of thin microscopic sections.

While engaged in the preparation of his monograph of the British species for the Palæontographical Society, Professor Nicholson kindly examined and either identified or described, specimens of most of the Canadian species of Stromatoporoids that were then represented in the Museum of the Geological Survey at Ottawa, but some additional material has since been received at that Museum, especially an interesting series of specimens

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from the (Galena) Trenton of Lake Winnipeg and its vicinity, which has yet to be examined. The determinations and descriptions of Canadian Stromatoporoids are scattered through many publications that are not always easily accessible, and the present paper, therefore, will consist of a stratigraphical and systematic list, with references, etc., of all the species that have either been recognized or even supposed to have been recognized in Canada, or described from Canadian localities, commencing with those that have been examined microscopically.

A. SPECIES THAT HAVE BEEN EXAMINED WITH THE
MICROSCOPE.

(Cambro-Silurian species.)

CLATHRODICTYON VARIOLARE, Rosen. (Sp.)

Stromatopora variolaris, Von Rosen. 1867. Ueber die Natur der Stromatop., p. 61, pl. 2, figs. 2-5.

Clathrodictyon variolare, Nicholson. 1887. Ann. and Mag. Nat. Hist., ser. 5, vol. XIX., p. 4, pl. 1, figs. 4-6.

“ “ Nicholson. 1889. Mon. Brit. Stromatop., pt. 2, p. 150, pl. 18, figs. 1-5, and pl. 17, fig. 14.

Specimens which appear to be referable to this species were collected from the Hudson River formation at the Jumpers, Anticosti, by J. Richardson in 1856, and at Cape Smyth, Lake Huron, by Dr. R. Bell in 1859. It is the species referred to on page 304 of the Geology of Canada as *Stromatopora concentrica*, which, according to Professor Nicholson, “so far as at present known” (in 1891), “is a purely European species and entirely confined to the Devonian rocks.”

Y 86113 :
Y 14712 : JAC :
ADABAO :

LABECHIA CANADENSIS, Nicholson and Murie. (Sp.)

Stromatocerium Canadense, Nicholson and Murie. 1878.
Journ. Linn. Soc., Zool., vol.
XIV., p. 223, pl. 3, figs. 9
and 10.

Labechia Canadensis, Nicholson. 1886. Mon. Brit. Stromatop.,
pt. 1, pl. 2, figs. 3-5: and Ann. and
Mag. Nat. Hist., ser. 5, vol. XVIII.,
pl. 14, pl. 2, fig. 5.

“ “ Nicholson, 1891. Mon. Brit. Stromatop.,
pt. 3, p. 163, pl. 20, fig. 9.

In Canada, so far as the writer is aware, this species has only been found in the Trenton limestone at Peterborough and Lake Couchiching, Ontario. At present it is not represented in the Museum of the Geological Survey at Ottawa.

LABECHIA HURONENSIS, Billings. (Sp.)

Stenopora Huronensis, Billings. 1865. Geol. Surv. Canada,
Pal. Foss., vol. I., p. 185.

Tetradium Huronense, Foord (partim). 1883. Contr. Micro-Palæont. Silur. rocks of Canada, pl. 7, figs. 1 and 1a, but not figs. 1, b-e.

Labechia Ohioensis, Nicholson. 1886. Mon. Brit. Stromatop., pt. 1, p. 32, foot-note, pl. 2, figs. 1 and 2: and Ann. and Mag. Nat. Hist., ser. 5, vol. XVIII., p. 13, pl. 2, figs. 1 and 2.

Labechia montifera, Ulrich. 1886. Contr. Amer. Palæont., vol. I., p. 33, pl. 2, figs. 9 and 9a.

The types of *Stenopora Huronensis* are from the Hudson River formation at Cape Smyth, Lake Huron, where several fine specimens were collected by Dr. R. Bell in 1859, and not by Mr. A. H. Foord as supposed by Professor Nicholson. Mr. L. M. Lambe, who has recently studied these specimens somewhat exhaustively, is convinced that

Labeckia Ohioensis, Nicholson, is identical with *Stenopora Huronensis*, and that the species ought to be called *Labeckia Huronensis*. Most of the specimens of this coral from Cape Smyth are large and some of them are massive, but one encrusts a colony of *Tetradium fibratum* and another nearly covers a shell of *Cyrtoceras Postumius*. Of the six specimens figured by Foord under the name *Tetradium Huronense* (op. cit., pl. 7), Mr. Lambe finds that while fig. 1 represents a portion of a specimen of *Labeckia Huronensis* encrusting *Tetradium fibratum*, and fig. 1a a portion of a massive specimen of *L. Huronensis*, that figs. 1, b-e are sections of *Tetradium fibratum*, Safford.

A few specimens of *L. Huronensis* were collected from the Hudson River formation at Club Island, Lake Huron, by Dr. R. Bell in 1865, and from rocks of the same geological horizon on the Credit River at Streetsville, by Mr. J. B. Tyrrell in 1888.

BEATRICEA NODULOSA, Billings.

Beatricea nodulosa, Billings. 1857. Geol. Surv. Canada, Rep. Progr. 1853-56, p. 344.

“ “ Hyatt. 1865. Am. Journ. Sc., vol. XXXIX., p. 266.

“ “ Nicholson. 1886. Mon. Brit. Stromatop., pt. 1, pp. 86, 88 and 89, pl., 8, figs. 1-8.

In his “Catalogues of the Silurian fossils of the Island of Anticosti,” Mr. Billings says that this species was collected by Mr. James Richardson in 1855, from the Hudson River formation at Wreck Point, Salmon River, and Battery Point, Anticosti, and from Division 1 of the Anticosti group at Macastey Bay. Specimens of the same species in the Museum of the Geological Survey at Ottawa are labelled as having been collected by Mr. T. C. Weston, in 1865, from the same formation at and near the West end lighthouse, at English Head, and at Gamache (or

Ellis) Bay, Anticosti. Professor A. Hyatt, who has collected many specimens of *B. nodulosa* at various localities on the same island, says that the size of the species, "as nearly as could be inferred from fragments, is not over four feet long, by from three to five inches in diameter at the larger end." To the naked eye some of the specimens look as if they were encrusted by a parasitic species of *Labechia*.

A silicified specimen which appears to be referable to this species, though its internal structure is almost obliterated, was collected by Mr. Weston in 1884 from the upper beds of the Hudson River formation at Stony Mountain, Manitoba.

BEATRICEA UNDULATA, Billings.

Beatricea undulata, Billings. 1857. Geol. Surv. Canada, Rep. Progr. 1853-56, p. 344.

" " Hyatt. 1865. Amer. Journ. Sc., vol. XXXIX., p. 266.

" " Billings. 1865. Can. Nat. ser. 2, vol. II., p. 405, fig. 1

" " Nicholson. 1886. Mon. Bri. top., pt. 1, pp. 86 and 89.

Numerous specimens of this remarkable fossil were collected from the Hudson River formation and from Divisions 1 and 2 of the Anticosti group, at several localities on the island of Anticosti, by Mr. J. Richardson in 1856, by Messrs. Verrill, Shaler and Hyatt in 1861, and by Mr. Weston in 1865. Characteristic examples of *B. undulata* have since been collected from the Hudson River formation at Snake Island, Lake St. John, P.Q., by Mr. Richardson in 1857; at Rabbit and Club islands, Lake Huron, by Dr. R. Bell in 1859; and in the "Upper beds" at Stony Mountain, Manitoba, by T. C. Weston, and A. McCharles in 1884. A specimen in the Museum of the Geological Survey at Ottawa, collected by Mr. Richardson

at Gamache Bay, Anticosti, which is imperfect at both ends, is ten feet five inches in length, as stated by Mr. Billings, and a similarly imperfect specimen collected by Messrs. Verrill, Shaler and Hyatt, is said to be thirteen feet and a half in length. Professor Hyatt is of the opinion that the length of an entire and adult specimen of this species was "certainly not less than twenty feet."

(*Silurian species.*)

ACTINOSTROMA MATUTINUM, Nicholson.

Actinostroma matutinum, Nicholson. 1891. Ann. and Mag. Nat. Hist., ser. 6, vol. VII., p. 322, pl. 9, figs. 1 and 2.

L'Anse au Gascon, five miles and a half east of Port Daniel, in the Baie des Chaleurs, Dr. R. Bell, 1862: one specimen, from Division 1 of the Chaleur group, which is supposed to be "about the horizon of the Niagara limestone." The *Stromatopora concentrica* of the list of Port Daniel fossils on page 444 of the Geology of Canada is almost certainly this species.

CLATHRODICTYON VESICULOSUM, Nicholson and Murie.

Clathrodictyon vesiculosum, Nicholson and Murie. 1878. Journ. Linn. Soc., Zool., vol. XIV., p. 220, pl. 2, figs. 11-13.
 " " Nicholson and R. Etheridge, jun., 1880. Mon. Silur. Foss. Girvan, p. 238, pl. 19, fig. 2.
 " " Nicholson, 1887. Ann. and Mag. Nat. Hist., ser. 5, vol. XIX., p. 1, pl. 1, figs. 1-3: 1889, Mon. Brit. Stromatop. pt. 2, p. 147, pl. 17, figs. 10-13, and pl. 18, fig. 12.

Specimens which have been recently identified with this species were collected from the Niagara limestone at

Lake Temiscaming by Sir W. E. Logan in 1845, at Thorold, Ontario, by E. Billings in 1857, and in the Anticosti group at Junction Cliff and the west side of Gamache or Ellis Bay, Anticosti, by T. C. Weston in 1865. It appears to be very abundant at Lake Temiscaming, where specimens were recently collected by Dr. R. Bell in 1887, and by Mr. A. E. Barlow in 1893 and 1894.

CLATHRODICTYON FASTIGIATUM, Nicholson.

Clathrodictyon fastigiatum, Nicholson. 1886. Mon. Brit. Stromatop., pt. 1. p. 43, figs. 3, *a-b*; and, 1887, Ann. and Mag. Nat. Hist., ser. 5, vol. XIX., p. 8, pl. 2, figs. 3 and 4: also, 1888, Mon. Brit. Stromatop., pt. 2, p. 152, pl. 19, figs. 1-5.

In the Guelph formation at Glenelg Township, six miles from Durham, where a few specimens were collected by Mr. Townsend in 1884.

CLATHRODICTYON OSTIOLATUM, Nicholson.

Stromatopora ostiolata, Nicholson. 1873. Ann. and Mag. Nat. Hist., ser. 4, vol. XII., p. 90, pl. 5, figs. 1 and 1*a*: 1874, Rep. Pal. Prov. Ont., pl. 1, figs. 1 and 1*a*: 1875, Rep. Pal. Prov. Ont., p. 63: and, 1878, Journ. Linn., Soc. Zool., vol. XIV., pl. 2, figs. 1 and 2.

Clathrodictyon (Stromatopora) ostiolata, Nicholson. 1886. Mon. Brit. Stromatop., pt. 1, p. 14.

Clathrodictyon ostiolatum, Nicholson. 1887. Ann. and Mag. Nat. Hist., ser. 5, vol. XIX., p. 11, pl. 3, figs. 1-3.

The type of this species was collected at Guelph, in the Guelph formation, by Mr. John Wilkie, not later than the year 1873, and specimens have since been obtained at

Elora by Mr. David Boyle in 1880, and at Durham by Mr. Joseph Townsend in 1884.

STROMATOPORA ANTIQUA, Nicholson and Murie.

Pachystroma antiqua, Nicholson and Murie. 1878. Journ. Linn. Soc., Zool., vol. XIV., p. 224, pl. 4, figs. 2-5.

Stromatopora antiqua, Nicholson. 1886. Mon. Brit. Stromatop., pt. 1, p. 17, pl. 5, figs. 8-11.

The types of this species were collected by Professor Nicholson from the Niagara limestone at Thorold, and there is a single specimen in the Museum of the Geological Survey at Ottawa, which was collected from the Guelph formation at Durham, by Mr. Townsend in 1884.

STROMATOPORA GALTENSIS, Dawson. (Sp.)

Cænostroma Galtense, Dawson. 1875. Life's Dawn on the Earth, p. 160: and, 1879, Quart. Journ. Geol. Soc. Lond., vol. XXXV., p. 52.

Stromatopora Galtensis, Nicholson. 1891. Mon. Brit. Stromatop., pt. 3, p. 173.

Hespeler, T. C. Weston, 1867: one specimen. Professor Nicholson, who has examined a portion of this specimen, says (op. cit.) that its minute structure "is practically destroyed by dolomitization, but all its general characters would lead to the belief that it is very closely related to *Stromatopora typica*, Rosen, and is probably identical with it." He further states that *Cænostroma constellatum* of Spencer, from the Niagara limestone near Hamilton, does not appear to be in any way distinguishable as regards its general characters from *C. Galtense*, Dawson, and that he is "strongly disposed to think that it is really identical with *S. typica*, Rosen. If the above view should prove to be correct, then *Cænostroma Galtense*, Dawson, and *C.*

constellatum, Spencer, must be considered as synonyms of *S. typica*, Rosen."

It remains to be seen whether Spencer's *C. constellatum* is the same as Hall's *Stromatopora constellata* (Pal. N. York, vol. II., 1852, p. 324, pl. 72, figs. 2, *a-b*), which latter species has not been examined microscopically.

STROMATOPORA CONSTELLATA, Spencer. (Sp.)

Cænostroma constellata, Spencer. 1884. Bull. Mus. Univ. St. Missouri, vol. I., No. 1, p. 48, pl. 6, fig. 11.

"Near the top of the Niagara series, at Carpenter's lime-kiln, two miles and a half south of Hamilton, where it is abundantly found associated with *Cænostroma botryoides*." Spencer. See the remarks on the preceding species.

STROMATOPORA HUDSONICA, Dawson. (Sp.)

Caunopora Hudsonica, Dawson. 1879. Quart. Journ. Geol. Soc. Lond., vol. XXXV., p. 52, pl. 4, fig. 9, and pl. 5, fig. 10.

Stromatopora Hudsonica, Nicholson. 1891. Mon. Brit. Stromatop., pt. 3, p. 172; and Ann. and Mag. Nat. Hist., ser. 6, vol. VII., p. 312, pl. 8, figs. 1-3.

The type of this species was collected by Dr. R. Bell in 1878 on the Albany River, Hudson's Bay, in rocks which are said to be of Upper Silurian age, though upon what evidence is not stated. Another specimen, which has since been identified with *S. Hudsonica*, was obtained by Dr. R. Bell in 1878 at Cape Churchill.

STROMATOPORA CARTERI, Nicholson.

Stromatopora Carteri, Nicholson. 1891. Mon. Brit. Stromatop., pt. 3, p. 174, pl. 1, figs. 6-7; and Ann. and Mag. Nat. Hist., ser. 6, vol. VII., p. 314, pl. 9, figs. 5 and 6.

"The only Canadian example I have seen is from a loose boulder of Silurian age, from Hayes River, Hudson's Bay," collected by Dr. R. Bell in 1878. Nicholson, on page 315 of the paper in the *Annals and Magazine of Natural History* indicated in the preceding reference.

SYRINGOSTROMA RISTIGOUCHESE, Spencer. (Sp.)

Ctenostroma Ristigouchense, Spencer. 1884. *Bull. Mus. Univ. Missouri*, vol. I., No. 1, p. 49, pl. 6, fig. 12.

Syringostroma Ristigouchense, Nicholson. 1886. *Mon. Brit. Stromatop.*, pt. 1, p. 97, pl. 11, figs. 11 and 12: and, 1891, *Ann. and Mag. Nat. Hist.*, ser. 6, vol. VII., p. 324, pl. 8, figs. 6-8.

In rocks believed to be of the age of the Lower Helderberg limestone of the State of New York, at Dalhousie, N.B., where specimens were collected by Sir J. W. Dawson and A. H. Foord in 1881.

(Devonian species.)

ACTINOSTROMA EXPANSUM, Hall and Whitfield. (Sp.)

Stromatopora expansa, Hall and Whitfield. 1873. *Twenty-third Reg. Rep. N. Y. St. Cab. Nat. Hist.*, p. 226, pl. 9, fig. 9.

Actinostroma expansum, Nicholson. 1891. *Ann. and Mag. Nat. Hist.*, ser. 6, vol. VII., p. 316, pl. 10, figs. 1 and 2.

Lake Winnipegosis, in limestone holding *Stringocephalus Burtini*, at a small island on the south-east side of Dawson Bay, where two specimens were collected by Mr. J. B. Tyrrell in 1889.

ACTINOSTROMA TYRRELLII, Nicholson.

Actinostroma Tyrrellii, Nicholson. 1891. Ann. and Mag. Nat. Hist., ser. 6, vol. VII., p. 317, pl. 8, figs. 4 and 5.

Apparently not uncommon and in fine condition in the Stringocephalus limestone at five different localities on the shore and islands of the southern portion of Dawson Bay, Lake Winnipegosis, where specimens were collected by J. B. Tyrrell and D. B. Dowling in 1889.

ACTINOSTROMA WHITEAVESII, Nicholson.

Actinostroma Whiteavesii, Nicholson. 1891. Ann. and Mag. Nat. Hist., ser. 6, vol. VII., p. 320, fig. 2, and pl. 9, figs. 3 and 4.

Peace River, near the mouth of Little Red River, Professor Macoun, 1875: two specimens.

ACTINOSTROMA FENESTRATUM, Nicholson.

Actinostroma fenestratum, Nicholson. 1889. Mon. Brit. Stromatop., pt. 2, p. 146, pl. 17, figs. 8 and 9: and, 1891, Ann. and Mag. Nat. Hist., ser. 6, vol. VII., p. 322, pl. 10, figs. 3 and 4.

North-west shore of Lake Manitoba, at Pentamerus Point, three miles and a half north of the mouth of Crane River, J. B. Tyrrell and J. F. Whiteaves, 1888; several specimens. Lake Winnipegosis, on two small islands at the southern end of Dawson Bay; also on the southwestern shore of Dawson Bay a little to the west of Salt Point, and at the south end of Rowan Island, in the western portion of the bay, J. B. Tyrrell, 1889: one specimen from each of these localities.

CLATHRODICTYON CELLULOSUM, Nicholson and Murie.

Clathrodictyon cellulosum, Nicholson and Murie. 1878. Journ. Linn. Soc., Zool., vol. XIV., p. 221, pl. 2, figs. 9 and 10. Nicholson, 1887. Ann. and Mag. Nat. Hist., ser. 5, vol. XIX., p. 11, pl. 2, figs. 7 and 8.

"Not uncommon in the Corniferous Limestone (Devonian) of Port Colborne and other localities in Western Canada." Nicholson.

CLATHRODICTYON LAXUM, Nicholson.

Clathrodictyon laxum, Nicholson. 1887. Ann. and Mag. Nat. Hist., ser. 5, vol. XIX., p. 12, pl. 3, figs. 4 and 5.

"Corniferous limestone, Port Colborne, Ontario," Nicholson. A fine specimen in the Museum of the Geological Survey at Ottawa, which was identified with this species by Professor Nicholson, was collected from the Corniferous limestone at Pelee Island, Ont., by the Rev. W. Minter Seaborn in 1884.

CLATHRODICTYON RETIFORME, Nicholson and Murie. (Sp.)

Stylodictyon retiforme, Nicholson and Murie. 1878. Journ. Linn. Soc., Zool., vol. XIV., p. 222, pl. 2, fig. 14, and pl. 3, figs. 1-3.

Clathrodictyon retiforme, Nicholson. 1887. Ann. and Mag. Nat. Hist., ser. 5, vol. XIX., p. 13, pl. 3, figs. 6-8.

"Rare in the Hamilton formation (Devonian) at Arkona, Ontario," where it was discovered by Dr. G. J. Hinde. Nicholson.

STROMATOPORA. (Sp.)

"Cfr. *S. bucheliensis*, Bargatzky, sp." Nicholson. 1891. Ann. and Mag. Nat. Hist., ser. 6, vol. VII., p. 313.

According to Professor Nicholson (op. cit.) two specimens collected by Mr. Tyrrell in 1889 from the Stringocephalus limestone of two small islands in Dawson Bay, Lake Winnipegosis, "have the general aspect of *Stromatopora bucheliensis*, Barg. sp., and are probably referable to this species. Unfortunately the specimens in question are dolomitized, and their internal structure is so far altered that this reference cannot be regarded as free from doubt."

STROMATOPORA. Sp.

"Cfr. *Stromatopora Hüpschii*, Barg., sp." Nicholson. 1891. Ann. and Mag. Nat. Hist., ser. 6, vol. VII., p. 314.

Lake Winnipegosis, at the south end of Snake Island (one specimen), and on a small island on the south-east side of Dawson Bay (one specimen); J. B. Tyrrell, 1889.

In reference to these two specimens Professor Nicholson observes (op. cit., p. 314) that they "belong to a species of *Stromatopora* in many respects similar to *S. Hüpschii*, Barg. Structurally they agree with the latter common European and British type, and differ from *S. bucheliensis*, Barg., in their coarse skeleton fibre, the lax reticulation of the skeleton, and the loose spreading form of the astrorhizæ. The internal structure of these specimens is, however, very poorly preserved, and it would be rash to refer them unreservedly to *S. Hüpschii*."

STROMATOPORELLA GRANULATA, Nicholson.

Stromatoporella granulata, Nicholson. 1873. Ann. and Mag. Nat. Hist., ser. 4, vol. XII., p. 94, pl. 4, figs. 3 and 3a: and,

1886, Mon. Brit. Stromatop., pt. 1, pp. 93, 94, pl. 1, figs. 4, 5 and 15, pl. 4, fig. 6, and pl. 7, figs. 5 and 6: also, 1891, Ibid., pt. 3, p. 202, pl. 26, fig. 1.

Hamilton formation at Arkona and near Thedford, Ontario. According to Professor Nicholson (Mon. Brit. Stromatop., p. 203), this species has been found only in the Hamilton formation and *S. Selwynii* in the Corniferous.

STROMATOPORELLA SELWYNII, Nicholson.

Stromatoporella Selwynii, Nicholson. 1892. Mon. Brit. Stromatop., pt. 4, p. 205, pl. 1, fig. 14, and pl. 26, figs. 2-4.

"Not uncommon in the Corniferous limestone of Port Colborne, Ontario." Nicholson, op. cit., p. 205.

STROMATOPORELLA INCRUSTANS, Hall and Whitfield. (Sp.)

Stromatopora (Ctenostroma) incrustans, Hall and Whitfield. 1873. Twenty-third Rep. Reg. N.Y. St. Cab. Nat. Hist., p. 227, pl. 9, fig. 3.

Stromatopora nulliporoides, Nicholson. 1875. Rep. Pal. Prov. Ont., p. 78.

Stromatoporella incrustans, Nicholson. 1891. Ann. and Mag. Nat. Hist., ser. 6, vol. VII, pp. 309 and 310, footnote.

"Hamilton formation at Arkona, and Corniferous limestone, at Port Colborne, Ontario." Nicholson. It is also abundant in the neighborhood of Thedford, Ontario, in the Hamilton formation.

STROMATOPORELLA (?) TUBERCULATA, Nicholson.

Stromatopora tuberculata, Nicholson. 1873. Ann. and Mag. Nat. Hist., ser. 4, vol. XII, p. 92, pl. 4, figs. 2 and 2a.

1874, Ibid., ser. 4, vol. XIII., p. 8, figs. 1, *a-c*: Rep. Pal. Prov. Ont., p. 14, pl. 1, figs. 2 and 3, and figs. 2, *a-c*, on p. 15: and, 1887, Ann. and Mag. Nat. Hist., ser. 5, vol. XIX., p. 15, pl. 3, figs. 9-11.

Common in the Corniferous limestone at Ridgeway and Port Colborne. Nicholson.

B. SPECIES OF DOUBTFUL AFFINITIES, THAT HAVE NOT
YET BEEN EXAMINED WITH THE MICROSCOPE.

(*Cambro-Silurian species.*)

STROMATOCERIUM RUGOSUM, Hall.

Stromatocerium rugosum, Hall. 1847. Pal. N. York, vol. I., p. 48, pl. 12, figs. 2, 2, *a-b*.

Stromatopora rugosa, Billings. 1873. Geol. Canada, p. 140, fig. 72.

According to Professor Hall, "this coral, so far as known, is confined to the Black-river limestone, and to the dark layers alternating with the Bird's-eye limestone." (op. cit., p. 48). In the Province of Quebec, specimens of this species were collected at Lake St. John, two miles west of the Metabechouan River by Mr. James Richardson in 1857. In Ontario, specimens were collected at Paquette's Rapids, on the Ottawa River, by Sir W. E. Logan in 1845; at Balsam Lake, Victoria Co., by Mr. Alexander Murray in 1853; and on Lot 13, Con. 4, of Stafford, by Mr. Richardson in 1853. In the "Geology of Canada" for 1863 the species is recorded as occurring on the Moira River, Hastings Co.; in the township of Douro, near Peterborough; and on Lacloche Island, Lake Huron. The specimens are usually silicified and their minute structure seems to be obliterated. At Paquette's Rapids there are two

forms (the one with a massive and the other with an encrusting canosteam), both of which have been identified with this species by J. W. Salter and E. Billings. The encrusting form, which often almost entirely covers the exterior of shells of *Maclurea Logani*, has somewhat the appearance of *Labechia*.

(*Silurian species.*)

STROMATOPORA HINDEI, Nicholson.

Stromatopora Hindei, Nicholson. 1874. Ann. and Mag. Nat. Hist., ser. 4, vol. XIII., p. 12, and p. 13, figs. 3, *a-c.* : also Rep. Pal. Prov. Ontario, p. 13, figs. 1, *a-c.*

"Common in a magnesian limestone of the age of the Niagara limestone (Upper Silurian), at Owen Sound, Ontario. Collected by Mr. G. J. Hinde." Nicholson. This species must be abandoned, as, in a letter recently received by the writer, Professor Nicholson says that "it was founded on a weathered *Cænites* perforated by some boring organism."

STROMATOPORA STRIATELLA, Nicholson.

Stromatopora striatella (D'Orbigny), Nicholson. 1875. Rep. Pal. Prov. Ont., p. 49.

"Common in the Niagara Limestone of Thorold. Rare at Rockwood." Nicholson. This identification, however, is not confirmed, as the occurrence of *S. striatella*, D'Orbigny (which is now known to be a *Clathrodictyon*) at these localities, is omitted by Professor Nicholson in his most recent references to that species.

CAUNOPORA WALKERI, Spencer.

Caunopora Walkeri, Spencer, 1884. Bull. Mus. Univ. St. Missouri, vol. I., No. 1, p. 46, pl. 6, figs. 9 and 9a.

Lower beds of the Niagara formation at Hamilton,

Ontario. "In the specimens that I have seen, the original matter is all silicified" Spencer.

CAUNOPORA MIRABILIS, Spencer.

Caunopora mirabilis, Spencer. 1884. Bull. Mus. Univ. St. Missouri, vol. I., no. 1, p. 47, pl. 6, figs. 10, 10, *a-b*.

"Only one specimen has been obtained from the Niagara formation at Hamilton, so far as I am aware." Spencer.

CÆNOSTROMA BOTRYOIDEUM, Spencer.

Cænostroma botryoideum, Spencer. 1884. Bull. Mus. Univ. St. Missouri, vol. I., no. 1, p. 50, pl. 6, figs. 13, 13, *a-b*.

Abundant "in the Upper Niagara beds at Carpenter's limekilns, about two and a half miles south of Hamilton, Ontario." Spencer.

DICTYOSTROMA RETICULATUM, Spencer.

Dictyostroma reticulatum, Spencer. 1884. Bull. Mus. Univ. St. Missouri, vol. I., no. 1, p. 51, pl. 6, figs. 14 and 14*a*.

"It occurs in the cherty beds of the Niagara formation at Hamilton, Ontario." Spencer.

(Devonian species.)

STROMATOPORA PERFORATA, Nicholson.

Stromatopora perforata, Nicholson. 1874. Ann. and Mag. Nat. Hist., ser. 4, vol. XIII, p. 11, and p. 12, figs. 2, *a-c*; also Rep. Pal. Prov. Ont., p. 15, and p. 16, figs. 3, *a-c*.

"Rare in the Corniferous limestone of Port Colborne," Ontario. Nicholson.

Genus of *STROMATOPORA MAMILLATA*, Nicholson.

Stromatopora mamillata, Nicholson: 1873. Ann. and Mag. Nat. Hist., ser. 4, vol. XII., p. 94, pl. 4, fig. 4: and, 1874, Rep. Pal. Prov. Ont., p. 17, pl. 1, fig. 4.

"Rare, in a silicified condition, in the Corniferous limestone of Port Colborne." Nicholson.

